AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A transmission mode detector for digital receivers to detect ~~the~~ a transmission mode of transmission frames, comprising:

a RF tuner for receiving a RF signal and generating an IF (Intermediate Frequency) signal;

an envelope detector for filtering the IF signal and generating a rough envelope waveform;

a slicer for quantizing the rough envelope waveform into a binary signal with high and low potentials;

a glitch remover for removing glitches in the binary signal and generating an envelope signal;

an A/D (Analogue-to-Digital) converter for sampling and digitizing the IF signal and generating a digital signal;

an I/Q (In-phase/Quadrature) De-multiplexer for extracting an in-phase and quadrature signal~~s~~ in OFDM (Orthogonal Frequency Division Multiplex) symbols from the digital signal; and

a mode detection unit for detecting the transmission mode according to ~~the~~ a time period of the envelope signal and ~~the~~ an auto-correlation of the OFDM symbols.

2. (Currently Amended) The transmission mode detector of claim 1, wherein the envelope detector includes:

a diode having a positive terminal for receiving the IF signal; and

a resister-capacitor (RC) network having one terminal connecting to the negative terminal of the diode and the other terminal grounded.

3. (Currently Amended) The transmission mode detector of claim 2, wherein the slicer is a comparator having a positive terminal connecting to ~~the~~ a negative terminal of the diode and a negative terminal connecting to a reference voltage for generating the rough envelope waveform.

4. (Currently Amended) The transmission mode detector of claim 1, wherein the mode detection unit computes the time period of the envelope waveform and the transmission mode is determined to be ~~the~~ a mode II or III if the time period is 24ms, ~~the~~ a mode IV if the time period is 48ms, and ~~the~~ a mode I if the time period is 96ms.

5. (Currently Amended) The transmission mode detector of claim 1, wherein ~~the~~ a correlation function c_j in the mode II is

$$c_j = \left| \sum_{i=j}^{j+\Delta_2} y2(i+N_2) \cdot y2^*(i) \right|,$$

where $N_2 = 512$ and $\Delta_2 = 126$; ~~the~~ a correlation function d_j in the mode III is

$$d_j = \left| \sum_{i=j}^{j+\Delta_3} y2(i+N_3) \cdot y2^*(i) \right|,$$

where $N_3 = 256$ and $\Delta_3 = 63$; and ~~the maxima~~ maximum auto-correlations C_k and D_k of ~~the~~ sequences $\{c_0, c_1, \ldots, c_{N_2+\Delta_2-1}\}$ and $\{d_0, d_1, \ldots, d_{N_3+\Delta_3-1}\}$, respectively, are the auto-correlations of the IF signal computed based upon the modes II and III, respectively, and y2 is the in-phase and quadrature signal.

6. (Currently Amended) The transmission mode detector of claim 5, wherein the auto-correlations, C_k and D_k, for successive N symbols are accumulated, respectively, to avoid ~~the~~ false detections when ~~the S/N~~ a signal-to-noise ratio of the IF signal is smaller than a threshold~~too low~~; that is, $C = \sum_{k=0}^{N-1} C_k$ and $D = \sum_{k=0}^{N-1} D_k$; and, therefore, the transmission mode is the mode II if $C > D$ and the mode III if $C < D$.

7. (Original) The transmission mode detector of claim 5, wherein the transmission mode detector uses the auto-correlations of the OFDM symbols under different modes (I, II, III, and IV) to detect the transmission mode.

8. (Original) The transmission mode detector of claim 6, wherein the transmission mode detector uses the auto-correlations of the OFDM symbols under different modes (I, II, III, and IV) to detect the transmission mode.